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[54] **X-RAY MASK**

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[58] **Field of Search** ..... 428/408, 446; 427/65, 427/160; 204/192 C, 192 SP, 192 E; 430/5

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[57] **ABSTRACT**

An improved X-ray lithography mask has been fabricated by forming an X-ray absorbing lithography pattern on a supporting foil of hydrogenated amorphous carbon. The substrate foil is formed by depositing a carbon film in the presence of hydrogen onto a surface having a temperature below 375° C. The hydrogen concentration is maintained sufficiently high that the resulting film has at least one atom percent of hydrogen. A film having about 20 atom percent of hydrogen is preferred. While impurities are permitted, impurities must be maintained at a level such that the optical bandgap of the resulting film is at least one electron volt. A film with an optical bandgap of about 2 electron volts is preferred.

20 Claims, 7 Drawing Figures